RESEARCH ARTICLES

Influence of Attitudes Toward Curriculum on Dishonest Academic Behavior

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Objectives. The objective of this study was to examine possible associations between students' self-reported behaviors and opinions towards academic dishonesty, and their attitudes towards curriculum, assessment, and teaching within the pharmacy program.

Methods. A questionnaire was developed and distributed to undergraduate (pre-licensure) students at 4 schools of pharmacy in Canada, including students enrolled in the international pharmacy graduate program.

Results. More than 80% of respondents indicated they had participated in one or more of the act of academic dishonesty described in the questionnaire. A weak to moderate correlation was found between students' attitudes towards pharmacy education and their self-reported behaviors related to academic dishonesty.

Conclusions. This study confirmed previous findings suggesting widespread academic dishonesty as well as a hierarchy of values with respect to students' perceptions regarding severity and importance of academic dishonesty. Despite methodological limitations inherent in examining academic dishonesty, there is a definite need to continue to examine this important issue. While this study indicated only a moderate correlation between attitudes towards curriculum and dishonest behaviors, the problem of academic misconduct is multifactorial and will require ongoing study.

Keywords: academic dishonesty, plagiarism, pharmacy education, attitudes, curriculum

INTRODUCTION

Dishonesty and unethical behavior are increasing concerns throughout North America. From accounting scandals in big business, to corrupt practices among elected officials, media reports suggest a precipitous decline in respectability and integrity, particularly in professional fields. Scholars may debate whether there has been an actual increase in dishonest behavior, or simply more aggressive reporting of transgressions, or perhaps a society growing increasingly inured to reports of scandal[1]; in many fields, concerns have been expressed regarding the moral and ethical choices and behaviors of individuals in positions of power and responsibility.

Within higher education, reports have consistently suggested that large numbers of students engage in aca-

demically dishonest behavior.[2] Storch and Storch define academic dishonesty as "...the act of giving or receiving unauthorized assistance in an academic task, or receiving credit for plagiarized work."[3] Incidence of cheating at university or college does not appear to be related to discipline, field of study, or geographic location.[1] Even in the highly trusted and respected professional fields within health care, studies indicate students are willing to (and frequently do) cheat in order to advance academically.[4] In a recent study, Rennie found that up to 56% of medical students would engage in behaviors defined as dishonest by the university.[5] Austin et al, in a pilot study of Canadian pharmacy students, found that over 90% admitted to engaging in 1 or more acts of academic dishonesty during the period of formal academic study, and suggested that in some cases, this was due to a curriculum that was perceived as irrelevant, out-of-touch with practice, and not related to the learners' self-identified needs.[6] Latif found that behaviors related to and attitudes towards academic

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dishonesty may be linked to gender or region, but that overall, academic dishonesty is commonplace.[7]

Studies have raised questions regarding the integrity of students admitted to professional programs, the quality of teaching and assessment they receive, and the competency of individuals who receive degrees. If cheating behaviors are as endemic as they appear to be in these and other studies, how certain can we be that individuals graduating from trusted professional programs actually have the knowledge, skills, and values necessary to provide patient care?

Within the profession of pharmacy, there is a growing body of literature examining academic honesty and dishonesty at the undergraduate degree level.[6-8] Like the profession itself, pharmacy education has undergone significant evolution in the past 15-20 years, in large part due to evolution in the role of pharmacists in the health care system and the growth of the pharmaceutical industry. Similar to other health professional fields, pharmacy education has moved away from traditional, didactic lecture-based curriculum, towards a more student-centered, problem-based learning paradigm, with commensurate changes towards group work, team teaching, and performance-based integrative assessment methods such as the Objective Structured Clinical Examination (OSCE). Changes have resulted in an increase in peer collaboration (group work and group learning), and an increased reliance on information technologies to retrieve, store, and disseminate information.

The question of whether these curriculum changes have had an influence on pharmacy students' behaviors and attitudes has recently been considered. Aggarwal et al studied academic honesty at 2 pharmacy schools in the United Kingdom and concluded that dishonest conduct is as prevalent among pharmacy students as students in other professions, with males more likely to admit to academic dishonesty than females.[8] They suggest that a "hierarchy of values" exists in which dishonest conduct in a high-stakes examination is viewed more seriously by students than dishonesty in coursework (such as faking laboratory data or collusion in completing an assignment). From this perspective, the curricular changes that encourage group-based learning but continue to assess individual's performance only may affect students' behaviors and attitudes by encouraging superficial rather than deep learning. Building on this work, Austin et al conducted a pilot study in one school of pharmacy in Canada, and determined that cheating behaviors may be endemic.[6] They argued that the endemic nature of cheating in pharmacy, other health professions, and in postsecondary education in general may not be a curricular issue per se, but instead point to an important develop-mental period in professional socialization, one in which individuals learn about ethical boundaries by testing them in a "safe" academic environment.

These and other studies point to the prevalence of academic dishonesty in postsecondary education in general, but do not necessarily explain why such behavior is occurring. Aggarwal et al have proposed that the curriculum itself may be alienating students and that this in turn may predispose students to cheating. If students do not value the education they are receiving, or if they perceive it to be irrelevant and simply a hurdle to be crossed, perhaps they do not perceive any great significance in cheating.[8] Preliminary studies have been inconclusive in demonstrating any correlation between attitudes towards curriculum and self-reported cheating behaviors; however, further study in this area is required.[6,8]

The dimensions of the issue are significant, as are its implications. New curricular methods have been implemented in pharmacy education to prepare students for evolving professional practice. Assessment of knowledge and skills is integral to professional education; prior to undertaking independent, professional responsibilities, students must demonstrate they have the competency to do so.[9] If assessment of these competencies is flawed or compromised, the validity of the final results may be called into question, and the basis for professional education and socialization may be compromised. While standardized entry-to-practice examinations (such as national and/or state boards) are generally written in highly secure situations which decreases the likelihood of dishonest behavior, these alone cannot be relied upon to ensure that candidates for professional practice have met all requirements for safe and effective patient care. Academic preparation and evaluation must be meaningful, reliable, and valid.

Academics need to understand the link between curricular satisfaction and attitudes and behaviors related to academic dishonesty in order to ensure curriculum and assessment are reliable, valid, generalizable, and dependable. An important first step is to understand whether the curriculum itself is driving students toward such behaviors.

The primary objective of this study was to examine the association between students' self-reported attitudes towards the pharmacy curriculum and assessment, and self-reported attitudes and behaviors related to academic dishonesty.

METHODS

This study builds on pilot work previously undertaken by Austin et al.[6] The study was conducted in 4 of Canada's 9 schools of pharmacy, thus encompassing

approximately 50% of all pharmacy students across Canada. In the pilot study, focus groups were undertaken to evaluate an instrument originally developed by Aggarwal et al to identify common incidents of academic dishonesty and to assess students' self-reported behaviors and attitudes towards such dishonesty.[8] The original instrument was revised within the context of unique features of Canadian pharmacy education (for example, rigorously assessed, faculty-operated experiential training and use of performance-based assessment methods such as the OSCE).

The instrument itself consisted of 2 parts. In part 1, students were asked to review 18 scenarios and answer the following 4 questions for each scenario:

1. Did this scenario constitute academic dishonesty? (Yes/No)
2. If "yes," how serious was the breach? (4-point scale ranking severity)
3. Have you ever engaged in this behavior? (Yes/No)
4. Are you aware of other students in your school engaging in this behavior? (Yes/No)

In part 2, students were asked to review 35 statements addressing their experience with the curriculum, teaching, and assessment in their particular program. Students were asked to rate each statement on a 5-point scale from strongly agree (5) to strongly disagree (1). Statements explored issues such as satisfaction with teaching and assessment methods, teacher-student relationships, and affinity with the profession of pharmacy.

The 39 questions in part 2 of the survey were developed to explore specific attitudes and opinions in the following domains: teaching methods (14 questions), assessment methods (9 questions), relevance of curriculum to practice and outcomes (10 questions), and students' satisfaction with their pharmacy education (4 questions). Two additional questions addressed general attitudes and opinions about education in general. Similar to previous work by Aggarwal et al,[8] students responded to each question on a 5-point scale ranging from strongly agree to strongly disagree. Each respondent's *approval rating* was calculated as the sum of "strongly agree" or "agree" responses (or "strongly disagree" or "disagree" responses for negatively worded items) divided by the total number of items (39). Each participant's *index score* was calculated by converting the 5-point scale to integer values (reversing the scale for negatively worded items) then dividing by the maximum possible score within each of the 4 domains identified above. An *overall index score* was then calculated using the mean of the 4 individual index scores. For both the domain-specific *index scores* and the *overall index score*, results were reported within a range of 0.01 (representing maximum dissatisfaction with pharmacy education) to 1.0 (representing maximum satisfaction with pharmacy education).

Correlations between attitudes towards the pharmacy curriculum and behaviors related to academic honesty were evaluated using Pearson's r. Individual domain-specific *index scores* were correlated with the number of self-reported acts of academic dishonesty committed by each individual (taken from part 1 of the survey instrument).

Co-investigators for this study were faculty members from the Universities of Toronto, Manitoba, Saskatchewan, and Alberta. Each institution offers the 4-year bachelor of science in pharmacy (BScPhm) degree program accredited by the Canadian Council for Accreditation of Pharmacy Programs (CCAPP). Across Canada, entry into pharmacy programs is highly competitive; consequently, rigorous admissions screening procedures are utilized involving both academic factors (eg, grade point average), and nonacademic factors (eg, suitability to practice as a professional). At the time of this study, none of the programs were explicitly attempting to assess honesty, integrity, or responsibility as part of the admissions process.

In addition to the BScPhm program, the University of Toronto also offered a 16-week bridging education program for foreign-trained pharmacists seeking licensure in Canada, the International Pharmacy Graduate (IPG) program. To be admitted to this program, candidates had to be licensed as pharmacists in another country, had to have successfully completed both fluency testing to ensure English-language proficiency and a challenge examination to establish comparability of the candidate's academic preparation to Canadian BScPhm standards. The focus of the IPG program was to allow pharmacists to acquire the knowledge, skills, and values necessary to apply their previous experience within the Canadian context. This program included academic coursework and assessment, prior learning assessment, mentorship, and peer support. Coursework and assessments were substantially similar to those utilized in the BScPhm program.

For the current study, 5 separate cohorts were identified and recruited: senior (ie, fourth year) undergraduate students at each of the 4 universities, as well as candidates enrolled in the IPG program. Investigators at each university received approval from their respective Ethics Review Boards to recruit participants and administer the 2-part questionnaire to those who volunteered. The survey instrument itself was designed to ensure anonymity of respondents: participants were not required (and in fact are strongly discouraged) to write anything on the survey instrument. In addition, minimal demographic data were collected (years since graduation from high school, and

sex). No assessment of ethnicity, cultural, or religious background was undertaken.

Investigators at each school utilized e-mail and/or a written information sheet to recruit students. Faculty-based investigators also encouraged students to participate and clarify concerns or questions regarding the study's objectives and methods. No reward was provided for participation, nor was any sanction imposed for non-participation; no mechanism was developed to "track" students who chose not to participate. No formal signed consent form was provided to participants; consent was assumed by their voluntary participation. The questionnaire was administered in the fall of 2003 and spring of 2004, depending on the scheduling and logistics constraints at each school. Data compilation was undertaken in the summer and fall of 2004, using *Excel* for Windows 2000. Data analysis was completed in the spring of 2005 using *Excel* for Windows 2000 and Statistical Package for Social Scientists (SPSS, v.11).

Funding for this study was provided by the Canadian Institutes for Health Research Summer Studentship; individual schools of pharmacy involved in this study supported miscellaneous administrative expenses (including photocopying of the survey instrument and mailing). All data were compiled and analyzed centrally at the University of Toronto.

RESULTS

A total of 263 students were recruited from the 411 students comprising the 5 cohorts evaluated for this study; response rate was 64%. Of these, 208 were enrolled in their senior year of the 4-year BScPhm program and 55 were enrolled in the IPG Program at the University of Toronto. Participation was highest amongst the IPG program students, 88% of whom elected to complete all or part of the survey instrument. 70% of all respondents in this study were female.

BScPhm respondents reported an average 6.75 years since graduation from high school (range 5-22); for IPG students this average increased to 11.3 years (range 6-31), consistent with the fact that all IPG students had graduated from a pharmacy program prior to moving to Canada.

Table 1. Mean Values: Attitudes and Opinions Towards Curriculum Across All Cohorts (N=263)

Domain	Mean Approval Rating	Mean Individual Index Score
Teaching methods	88.4 (6.5)	0.77 (0.04)
Assessment methods	76.3 (7.9)	0.60 (0.06)
Relevance to pharmacy practice	79.2 (7.5)	0.67 (0.05)
Overall satisfaction with pharmacy education	81.2 (6.3)	0.73 (0.05)

*Means and standard deviations presented.

Aggregated results for all respondents are presented in Table 1 and aggregated results by cohort are presented in Table 2. Data from part 1 of the survey are presented in Tables 3 and 4. As indicated in Table 3, variability in attitudes towards academic honesty and dishonesty between the cohorts examined is evident. Table 4 documents the percentage of students within each cohort who admitted to engaging in specific activities described in the study scenarios. Once again, inter-cohort variability is evident. To enable clear presentation of data in these tables, standard deviations have not been reported.

Correlations between attitudes towards the pharmacy curriculum and behaviors related to academic honesty were evaluated using Pearson's r, with results reported in Table 5.

DISCUSSION

This study supports the findings of previous studies describing academic dishonesty as ubiquitous. Likewise, no significant correlation was found between attitudes towards curriculum and assessment, and dishonest behaviors. Correlations presented in Table 5 indicate that some students who are highly satisfied with pharmacy education still engage in acts of academic dishonesty. Further work is required to elaborate on these findings and develop explanatory theories. For example, students may be expressing dissatisfaction with teaching and assessment methods because they are aware of rampant cheating and they themselves do not engage in such

Table 2. Mean Values: Approval Ratings and Mean Index Scores by Cohort

	Alberta (n=29)	Manitoba (n=27)	Saskatch. (n=53)	Toronto (n=99)	IPG (n=55)
Teaching methods	88.0	87.9	88.7	87.7	92.2
Assessment methods	77.1	73.5	77.9	71.4	80.9
Relevance to pharmacy practice	82.2	81.2	84.3	77.4	92.2
Overall satisfaction with pharmacy education	83.4	83.3	85.0	79.3	93.3
Mean index score	0.81	0.81	0.82	0.74	0.88

*Standard deviations not presented to ensure readability of table.

Table 3. Survey of Pharmacy Students' Attitudes Towards Cheating*

Scenario	Alberta (n=29)	Saskatch. (n=53)	Manitoba (n=27)	Toronto (n=99)	IPG (n=55)
Using hidden notes during exam	3.6	3.3	3.5	3.5	3.8
Writing notes on hands/arms during exam	3.6	3.1	3.5	3.4	3.8
Writing mnemonics on hands/arms during exam	3.0	2.8	3.0	3.0	3.9
Borrowing assignments from a peer to glean ideas, but not to copy	1.4	1.5	1.3	1.2	3.6
Borrowing assignments from a peer to directly copy, without permission	2.9	2.8	2.5	2.6	2.1
Borrowing assigments from a peer to directly copy, with permission	2.7	2.5	2.2	2.3	3.4
Asking peer for details of lab exercise or OSCE	2.1	1.9	1.8	2.1	2.0
Offering details to a peer regarding content of lab exercise or OSCE	3.0	3.1	3.2	2.9	3.4
Offering general description, but not details to a peer regarding lab/OSCE	1.8	2.3	2.0	2.0	2.1
Copying information from internet without any citation	2.2	2.3	2.6	2.4	1.2
Copying information from internet with incomplete citation	2.9	2.9	3.1	3.0	1.9
Invention of laboratory data (fudging of results)	2.2	2.1	2.0	2.1	3.8
Asking neighbour a question during practical exam or OSCE	2.0	1.6	1.8	1.8	2.0
Copying assignments from upper years handed down to lower years	2.0	1.6	1.2	1.4	2.3
Undeservedly lenient marking during peer assessment	2.1	1.9	1.9	1.7	1.2
Presenting false/misleading medical reasons to gain extension on assignments or exemption from test	2.9	2.9	2.7	3.0	3.8
Providing assignments to students in lower years	1.6	1.4	1.2	1.4	2.0
Borrowing notes from peer to compensate for "skipping" for no valid reason	1.8	1.3	1.7	1.1	2.0

*Students were asked to rate each statement on a 5-point scale on which 5 = strongly agree and 1 = strongly disagree.

behaviors. For such students, the perception that their peers are "getting away with it" may result in alienation toward pharmacy education without actually changing their personal academic honesty.

One aim of this study was to identify whether the curriculum was "driving" students toward academic dishonesty. Across all cohorts examined (Tables 1 and 2), there appeared to be a relatively high level of satisfaction toward pharmacy education, teaching, and assessment, and the relevance of the pharmacy curriculum to practice. IPG students gave the highest approval ratings and had the highest index scores; however, this may be an artifact given the compressed and unique nature of their curriculum compared to that of the students in the other cohorts. These findings suggest that, for this group of students, the pharmacy curriculum changes made in Canada over the past decade have been generally well accepted. Since no similar data are available on students' satisfaction before curriculum changes were implemented, it is not possible to conclude that these changes have "enhanced" or "diminished" student satisfaction.

This study has confirmed Aggarwal et al's theory that patterns of cheating exist, and that a "hierarchy of values" appears to govern academic dishonesty within schools of pharmacy.[8] Furthermore, the findings in this study suggest that this "hierarchy of values" may be institution or cohort specific, rather than generalizable across all pharmacy students. In examining the data presented in Table 3, each cohort appears to have evolved its own, slightly different, set of "rules" governing what kinds of cheating are more acceptable than others. For example, among the IPG group, there appears to be widespread acceptance of (and consequently, lower severity index scores given to) activities that may be broadly described as plagiaristic, such as falsely attributing Web-based citations, or not citing "cut-and-paste" material at all. This appears to be less tolerated (with commensurately higher severity index scores) among students in the BScPhm cohorts. Conversely, there appears to be relatively widespread acceptance of "fabricating" or "fudging" on laboratory data in chemistry and pharmaceutics courses among BScPhm students at most schools, yet this behavior is seen as less acceptable among the IPG student cohort. These findings raise questions regarding "cultures of cheating" that are cohort or location specific, and how the oxymoronic "rules" governing such behaviors may be developed and communicated by members of that cohort.

Table 4. Self-Reported Behaviors of Pharmacy Student Participants, %

Scenario	Alberta (n=29)	Saskatch. (n=53)	Manitoba (n=27)	Toronto (n=99)	IPG (n=55)
Using hidden notes during exam	0	0	0	0	0
Writing notes on hands/arms during exam	0	1.9	0	2.0	0
Writing mnemonics on hands/arms during exam	0	9.4	7.4	3.0	0
Borrowing assignments from a peer to glean ideas, but not to copy	62.1	67.9	63.0	83.0	21.0
Borrowing assignments from a peer to directly copy, without permission	0	0	3.7	12.1	0
Borrowing assignments from a peer to directly copy, with permission	13.8	7.5	14.8	29.3	12.5
Asking peer for details of lab exercise or OSCE	51.7	64.2	70.4	54.4	22.0
Offering details to a peer regarding content of lab exercise or OSCE	24.1	5.7	3.7	18.2	1.9
Offering general description, but not details to a peer regarding lab/OSCE	48.3	20.8	40.7	35.4	12.5
Copying information from internet without any citation	20.7	24.5	14.8	21.2	66.7
Copying information from internet with false citation	3.4	1.9	3.7	12.1	55.2
Invention of laboratory data (fudging of results)	57.6	39.6	63.0	65.7	18.2
Asking neighbour a question during practical exam or OSCE	27.6	17.0	3.7	21.2	12.5
Copying assignments from upper years handed down to lower years	51.7	90.6	88.9	91.9	12.5
Undeservedly lenient marking during peer assessment	34.5	30.2	63.0	56.6	77.7
Presenting false/misleading medical reasons to gain extension on assignments or exemption from test	0.0	1.9	3.7	1.0	0
Providing assignments to students in lower years	62.1	88.7	77.8	86.9	12.5
Borrowing notes from peer to compensate for "skipping" for no valid reason	34.5	45.3	29.6	46.5	23.0

Clearly, academic codes of conduct, instructor expectations regarding honest behavior, and students' attitudes and behaviors vary. Previously offered explanations, rationalizations, or justifications (such as "the curriculum is boring so I'm going to cheat" or "this course isn't relevant so it doesn't matter if I cheat or not") were not fully borne out in this study, as the correlations between attitudes towards dishonest behaviors and engagement in dishonest behaviors were marginal at best.

For educators and regulators, this study raises more questions about the pervasive nature of academic dishonesty and explanations for these phenomena. Austin et al have offered a developmental hypothesis, one that views cheating behaviors as a necessary stage of moral/professional development.[6] The relatively lower incidence of cheating among IPG students, coupled with the relatively higher severity ratings, supports the notion that older, experienced professionals view cheating behaviors

Table 5. Correlation Between Admitted Acts Committed of Academic Dishonesty and Attitudes Towards the Pharmacy Curriculum

	Teaching Methods	Assessment Methods	Relevance to Pharmacy	Overall Satisfaction
0 admitted acts (n=37)	0.63	0.59	0.65	0.59
1-2 admitted act(n=201)	0.67	0.65	0.62	0.63
3-5 admitted acts (n=20)	0.63	0.51	0.56	0.55
>6 admitted acts (n=5)	0.57	0.53	0.53	0.54

through a different, more critical lens than the neophyte, which is consistent with current theories of conservatism.[10,11] However, the magnitude of variability between responses given by the IPG cohort and those given by the 4 BScPhm cohorts was not sufficient to draw meaningful conclusions.

This study raises questions for educators, many of whom are seeking answers to the problem of academic dishonesty. The ubiquity of this phenomenon across disciplines, schools, and time zones suggests attempts to select more "honest" students through new admissions procedures may meet with limited success. Similarly, the lack of association between curricular satisfaction and cheating behaviors suggests that curricular reform by itself may not resolve the issue. The behavioralist link between dishonesty and punishment may also be tenuous. All schools involved in this study have academic codes of conduct and prosecute students who have been caught cheating in a vigorous and public manner. In all schools, students face penalties ranging from failing grades to suspension to expulsion should it be proven that they engaged in acts of academic dishonesty, and these penalties are publicized and well-known by students. The existence of such codes and awareness that prosecution can occur does not appear to dissuade large numbers of students from engaging in acts of academic misconduct (although, admittedly, the detection and prosecution of such offenses is relatively infrequent).

Unfortunately, the results of this study do not point to immediate solutions to these issues. While curricular improvement should produce more engaged and interested students, such engagement by itself does not necessarily lead to less frequent cheating behaviors, particularly among BScPhm students. Paradoxically, this study took place during a period of unprecedented and heightened interest in the issue of professionalism and academic honesty within pharmacy education across North America. Education and reinforcement (particularly around issues of professionalism, plagiarism, appropriate citation of references, and the academic code of conduct) does not appear to have altered students' underlying attitudes toward academic dishonesty or their self-reported rating of severity of certain kinds of incidents.

Further study is required to understand why academic dishonesty is such a ubiquitous phenomenon in postsecondary education. While this study attempted to isolate and examine one particular element (students' attitudes towards curriculum and assessment), other elements remained uncontrolled. In particular, broader social trends and an apparent sense of indifference on the part of the public towards high profile cases of cheating in business and government may be desensitizing students in some way. Alternatively, as has been suggested by Ferguson et al, Western societies may have reached a "tipping point" with respect to honest behavior.[12] Whereas, in the past, appealing to students' respect or reverence for spiritual, moral, or nationalistic authorities may have been successful in convincing them to engage in ethical behavior, such appeals now fall on deaf ears. In a world where cheating is allowed to become rampant, cheating will become normalized. At that point, cheating is not only acceptable, but necessary as a way of simply keeping up and getting by, not just as a way of advancing. Keyes argues that dishonest behaviors are of increasing concern since, today, deception is less vilified by society and there is a more casual attitude towards lying.[13] As he points out, colloquial terms such as "misspeak" and "spin" are well-understood terms for describing complex phenomena occurring at the intersection of truth and deception. He suggests that "...(t)echnology has also abetted casual liars by rendering individuals increasingly anonymous...(w)e used to live very close together, in small communities where the consequence for telling lies was much greater."

The implications for higher education, and for society, are profound and disturbing. Has cheating really become "the norm"? In a qualitative study of undergraduate pharmacy students in the UK Ng et al[14] identified some potential causes of academic dishonesty within the pharmacy curriculum, and raised provocative questions as to whether some forms of cheating are acceptable simply because the majority believes these forms are less serious than others. How are these tacit rules which appear to govern students' perceptions of less serious vs. more serious forms of cheating developed and communicated? This question is of fundamental interest and importance to educators and regulators, and awaits further study.

Limitations

The literature on academic dishonesty is broad, but consists largely of anonymous self-reporting questionnaires such as the one used in this study. This reflects a significant challenge (both ethically and methodologically) in examining a complicated phenomenon such as this: since, most frequently, cheating is a private, personal matter that occurs without outside observation or knowledge, investigators must rely on anonymous self-reporting. Of course, those volunteers who respond to a survey such as this may differ considerably from those who select not to respond. At least one study has suggested that such studies will tend to underreport the true incidence of undesirable behavior[8]; the results of this study need to be interpreted with this limitation in mind.

Studies such as this must also protect the identity of participants, so as to encourage full and honest disclosure. As a result, salient demographic characteristics of respondents (including race, ethnicity, religious background, cultural background, age, socio-economic status) are generally not accepted by Ethics Review Boards as part of the instrument design. Consequently, important clues to specific sub-groups who may be more likely to engage in academic dishonesty cannot emerge from studies such as this, and all participants are treated as demographically homogenous (with the exception of sex).

A unique feature of this study was the inclusion of the cohort of IPG students. This group has not been studied extensively, but with international migration patterns, foreign-trained health care professionals are becoming an increasing large and important subgroup within most professions and trades. The findings related to the IPG group in this study should be interpreted within the context of a complex psychosocial adaptation process involved in immigrating to a country like Canada. No studies have been reported indicating the extent of over- or underreporting among foreign-trained professionals, but anecdotally, some participants expressed surprise that the instrument used was truly as anonymous and untraceable as indicated by the research team. A lack of belief in the integrity of the research process in Canada, or a belief that this research process was merely a guise to "trap" students, may have skewed reporting of results. Consequently, the different results of the IPG candidates should be interpreted with some caution.

Another limitation of this study may be the nature of the participants involved. In Canada, there is increasing discussion regarding potentially moving to the first-professional PharmD degree program, as was undertaken in the United States a decade ago. Students in first-professional PharmD programs are generally older, and this maturity may result in differences in attitudes and behaviors regarding academic dishonesty. Further work is required to determine whether this difference is meaningful, and how first-professional PharmD program students may differ in their attitudes and behaviors. This is of particular interest since there is some variability in first-professional PharmD programs themselves (eg, accelerated vs. traditional programs).

In interpreting this study, it is important to realize there is little published evidence to suggest that those who are academically dishonest will be more likely to commit unethical or illegal acts as pharmacists. This is clearly an interesting and important area for further research, particularly in light of the findings of this and other studies that suggest academic dishonesty is widespread within pharmacy.

Despite these caveats, and acknowledging the important and real limitations associated with studying academic dishonesty, this study has built upon previous work undertaken in pharmacy and other health professions, and has confirmed certain findings, such as the role of hierarchy of values in determining severity of cheating, and the ubiquity of academic dishonesty. Importantly, the lack of association between attitudes towards curriculum and dishonest behaviors does not indicate that there is no role for attitudes in the emergence of behaviors. Rather, it points to the complexity of the phenomenon and the need to study this issue further, particularly to develop methods that allow for a multifactorial approach to examining academic dishonesty.

CONCLUSIONS

This study was undertaken to examine the influence of one particular variable (students' attitudes towards the curriculum and assessment) on behavior (specifically, self-reported acts of academic dishonesty). Data from this study did not conclusively point to an association between positive attitudes and positive behaviors, but instead confirmed previous findings that academic dishonesty appears to be ubiquitous.

Overall, the issue of academic honesty remains a major concern for educators, regulators, and society at large. The public expects that health care professionals have graduated from academic programs where they have been taught important competencies and that these competencies have been learned. Assessment is the vehicle through which professional competencies and the ubiquity of academic dishonesty strikes to the heart of the validity of the assessment and educational processes for professionals. Without further study, questions about the integrity of professional education and practice will continue, and the public's faith in the postsecondary and health care systems may be jeopardized.

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